

The funds raised at the "Chez Nicole" event will be used to reach even more high school students and purchase supplies for the "breast health for teens" program. The money also is needed to train school nurses and health teachers on how to help young women maintain breast health throughout their life time.

I am proud to commend the generosity of Nicole Testa and Joe Cannatelli and their "Chez Nicole" team for their commitment to helping the Biden Breast Health Initiative educate more young women about breast cancer.

### HIGHER EDUCATION AND TECHNOLOGY

Mr. TORRICELLI. Mr. President, I rise today to bring to your attention an editorial written by Dr. Harold (Hal) Raveche, president of Stevens Institute of Technology that appeared in the Boston Sunday Globe on February 18, 2001. Dr. Raveche is a highly respected academician. His recent Boston Globe editorial discusses the need to change our higher education system to reflect the changing dynamics of a high technology driven New Economy. Stevens is already teaching its students in a unique, different way called "Technogenesis."

I ask unanimous consent that Dr. Raveche's editorial be printed in the RECORD and urge my colleagues to give it thoughtful consideration.

There being no objection, the material was ordered to be printed in the RECORD, as follows:

IF HIGH SCHOOLS CAN CHANGE, THEN WHY NOT COLLEGES? HIGHER EDUCATION LARGELY THE SAME, DESPITE TECHNOLOGY ADVANCES

(By Harold J. Raveche)

College freshmen right out of high school are discovering an amazing contradiction once they cross the threshold into higher education: Colleges are far more expensive to attend, yet offer an education style that is out of date and not even up to par with what these kids experienced in high school.

President Bush's first week in office was dubbed education week. If this is truly the case, his administration should see that American colleges are offering students a century-old model of education, still powered by complacency and resistance to change, that lost its relevance nearly 30 years ago. If American high schools and elementary schools were as static as our colleges, the public would demand a major revolution. Yet, colleges continue under systems that seem impervious to change.

What's required is the breaking down of the walls that separate the departments in a college, and collaboration among the faculty, instead of the fiefdoms that are the rule. And, it requires quite a bit of capital to retool the system.

The more advanced high schools have already done this, and now colleges find themselves in the embarrassing position of having their freshmen become bored quickly by old systems of teaching that lack the excitement and challenge of what the students found in their junior and senior years of secondary schools. (This already occurs as the computer skills of recent high school students surpass the information technology so-

phistication of their college instructors. The teaching of core subjects such as science, mathematics, and writing has not changed for nearly a century. Computer technologies have festooned teaching with many new bells and whistles, but curriculums and content have remained largely the same. No matter what endeavor future graduates choose, they will increasingly face challenges that are inherently interdisciplinary, involving the overlap of people, technology, and global commerce. Yet, we continue to teach courses as we did in 1900, clinging to the belief that we are giving students critical thinking skills. But we aren't.

For example, topics in chemistry and physics, such as acid-base equilibria, electronic structure, Newton's laws, and Einstein's photoelectric effect are important concepts for students to learn. But, must we teach these concepts in the same static way? Can you imagine how many more students would be turned on by science if they studied chemistry through the learning of autoimmune diseases and how synthetic implants become functioning parts of our bodies? Can you imagine learning mechanics through bone and muscle functions? How about teaching quantum physics illustrating how semiconductors in Internet entertainment electronics work?

Further, can you imagine requiring writing assignments for computer science and electrical engineering majors, where papers were graded on content, grammar, and literary style? Can you imagine having math, literature, and marketing majors on the same learning team where their assignments include organizing a presentation for faculty review? Such changes would better prepare tomorrow's graduates.

Team-based learning prepares students to apply their knowledge and skills in context. You are a recent graduate with an economics degree who has just taken a job with a technology start-up company. Your CEO hired you because of your educational background, but she expects you to challenge the assumptions of the inventor, design engineer, production supervisor, and sales manager. Now, what do you do, because in college you studied only with other economics majors and hung out with your circle of friends? Had your college made the commitment to having you learn, in part, through teams consisting of students from different majors, you might be better prepared.

Faculty members also benefit through such curriculum changes because they are better able to assess the overall capabilities of the university's students, whereas today the evaluation of student progress is largely limited to areas of specialization. In this way, faculty will understand the cumulative impact on students of the university's various academic requirements. Graduates, after all, are the product of their total college experience. Beyond academe, it is well understood that organizations thrive when their component elements create synergy. This "best practice" applies to colleges.

Is such innovation a fad? Perhaps, in the view of traditionalists, I, rather, see these changes as the outcome of a whole new approach to undergraduate education, one that redefines instruction and collaboration according to how the world is evolving. Some colleges may claim that they are attempting change by adding new requirements to existing courses of study. That's the problem—courses have been inserted into yesterday's programs of study because of the tugs of technology and other factors. Instead, we must redesign our curriculums to advance our students.

Have you looked under the hood of your car lately? The engine is not just the old one with a few new parts. The former engines

have been redesigned and technology is everywhere. Change was necessary to meet environmental, cost, and marketplace issues.

Specialists can't repair newer models without extensive training, new knowledge, and skills. To develop new curriculums, a very difficult task, faculty need training and ample time.

Realizing the new vision for higher education will be expensive. Faculty need opportunities to partner with faculty in other departments, which means paid leaves, reduced teaching loads, and incentives, particularly to engage research-oriented faculty. Workshops are needed for faculty and graduate teaching assistants, where outside professionals, who see connection between technology, social issues, and business, help shape the new curriculums.

Partnerships should include professionals beyond academe. Ongoing input and instruction from accomplished members of the private and government sectors will help ensure that students learn in the context of what they will encounter after graduation.

Classrooms with Internet access and new equipment are needed so that faculty can creatively utilize resources beyond the boundaries of their universities. New laboratories are needed that they have equipment that enables students to perform experiments beyond the traditional, narrowly focused exercises in chemistry, physics, and biology labs. Collaboration and innovation must be encouraged. In the current system, faculty are rewarded for teaching in their areas of specialization, research, and service. Faculty should be recognized for collaboration on new courses that go beyond their areas of expertise. How do you reward teamwork?

Policies are needed to minimize turf wars that will inevitably arise if academic units fear that curriculum redesign will cause the number of courses they teach to decrease. Perhaps the most important step in ensuring success is for the president to nurture the campus-wide mindset that interdisciplinary and team-based learning will be rigorous and subject to the highest standards of faculty scholarship.

Predictably, innovation will be accompanied by opinions, from various quarters, that departure from the tried and true will lower standards. On the contrary, by clinging to the status quo, academic preeminence will slowly, but inevitably, erode because changes in the world are outpacing undergraduate education.

Employers are investing more in training college graduates. It takes up to two years before recent graduates are able to contribute at the level expected by their companies. Shortcomings cited include people skills, ability to apply knowledge, and adjusting to projects involving professionals from different backgrounds and with different skill sets.

Each college and university has core values upon which their education is built. Such values do not change with time. However, using them as the foundation, institutions must redesign their curriculums to give students the broadest preparation for a world where traditional boundaries are blurred and disappearing. Without such innovation, colleges will be squeezed at both ends—high school seniors and employers will be disappointed.

### ANTI-SEMITISM

Mr. SMITH of Oregon. Mr. President, I rise to make a statement on a matter that troubles me deeply. I do so with considerable reluctance.